REMARKS/ARGUMENTS

Claims 1, 4-6, 9, 12-14, and 17-20 are pending in the present application. By this Response, claims 9 and 14 are canceled, and claims 1, 6, and 17-20 are amended. Support for the amendments to these claims may be found at least on page 12, line 16 to page 13, lines 28 and page 17, lines 5-20. Reconsideration of the claims is respectfully requested.

I. 35 U.S.C. § 103, Obviousness, Claims 1, 4-6, 9, 12-14 and 17-20

The examiner has rejected claims 1, 4-6, 9, 12-14 and 17-20 under 35 U.S.C. § 103 as being unpatentable over Chen et al., U.S. Patent No. 6,055,580 (hereinafter "*Chen*") in view of Webber et al., U.S. Patent No. 6,820,186 B2 (hereinafter "*Webber*"). This rejection is respectfully traversed.

The examiner states:

> As for claim 1, Chen et al teach a method in data processing system for transferring [col. 7, lines 62-65] data from a memory [e.g., main memory 104, cache 105] to a network adapter [network interface card 124], the method comprising:
>
> receiving [col.7, lines 62-65] a request to transfer data in the memory to a network adapter;
>
> setting a transfer size to align [col. 3, lines 21-25; col. 3, lines 42-45; col. 9, lines 43-59] the data with a cache line size if the amount of data to be transferred is unequal [col. 3, lines 17-21] to the cache line size, wherein an amount of data is less that or equal to the transfer size, and wherein the amount of data to be transferred is in a frame and has a frame size [conformed to PCI system's inherent use of memory line sizes and boundaries, e.g., 32 bytes, during dated transfers in col. 9, lines 27-30, col. 11, lines 12-15 or packets in col. 7, lines 2-5 and NDIS packet descriptor (inherently having a packet length) in col. 8, line 65-col. 9, line 6]; and
>
> responsive to receiving the request, transferring to the network adapter an amount of data equal to the transfer size ["memory line sizes" in col. 11, lines 12-15].
>
> Specifically, Chen et al disclose the data from the memory to the network adapter may contain not only data ["transfer packets" in col. 9, lines 1-4] for the network transmission but also unwanted data for the network transmission [e.g., "various other information" in col. 9, lines 1-4 or "extraneous data" in col. 9, lines 53-59]. However, Chen et al do not explicitly disclose setting a valid length indicator, wherein the valid length indicator is set to the amount of data and wherein the network adapter outputs only the amount of data set by the valid length indicator after the data has been transferred to the network adapter. Webber et al teach transferring data [col. 1, lines 5-19] aligned with a cache line size from a memory to a network adapter in order to build a packet payload to be transmitted on a network and further teach setting a valid length indicator ["given a length for the packet payload data" in col. 2, lines 32-35], wherein the valid length indicator is set to the amount of data and wherein the network adapter outputs only ["copy only the desired data into a packet buffer" in col. 1, lines 14-16] the amount of data set by the valid length indicator after [col. 4, lines 36-40] the data has been transferred to the network adapter. At the time the invention was made, one of ordinary skill in the art would have been motivated to combine the cited references because they both teach transferring data from a memory to a network adapter for outputting the data to the network and the Webber et al's teaching of a valid length indicator indicating only

the amount of data [packet payload] output to the network would increase feasibility in building a network frame ["Ethernet packets" in col. 7, lines 2-4 of Chen et al].

Office Action dated July 26, 2007, pages 3-5.

The examiner further states:

> 2. Applicant's arguments filed 5/7/2007 have been fully considered but they are not persuasive. In the Remarks, Applicant argues in substance that Webber does not teach "setting a valid length indicator, wherein the valid length indicator is set to the amount of data and wherein the network adapter outputs only the amount of data set by the valid length indicator after the data has been transferred to the network adapter." The Examiner respectfully disagrees. Webber teaches setting a valid length indicator ["given a length for the packet payload data" in col. 2, lines 32-35], wherein the valid length indicator is set to the amount of data and wherein the network adapter outputs only ["copy only the desired data into a packet buffer" in col. 1, lines 14-16] the amount of data set by the valid length indicator after [col. 4, lines 36-40] the data has been transferred to the network adapter.

Office Action dated July 26, 2007, page 2.

The examiner bears the burden of establishing a *prima facie* case of obviousness based on the prior art when rejecting claims under 35 U.S.C. § 103. *In re Fritch*, 972 F.2d 1260, 23 U.S.P.Q.2d 1780 (Fed. Cir. 1992). For an invention to be *prima facie* obvious, the prior art must teach or suggest all claim limitations. *In re Royka*, 490 F.2d 981, 180 USPQ 580 (CCPA 1974). Independent claim 1, which is representative of independent claims 6 and 17-20 with regard to similarly recited subject matter, reads as follows:

> 1. A method in a data processing system for transferring data from a memory to a network adapter, the method comprising:
>
> receiving a request to transfer data in the memory to a network adapter;
>
> setting a transfer size to align the data with a cache line size if the amount of data to be transferred is unequal to the cache line size, wherein an amount of data is less than or equal to the transfer size, wherein dummy data is included with the amount of data to be transferred to align the data with the cache line size if the amount of data to be transferred is less than the transfer size, and wherein the amount of data to be transferred is in a frame and has a frame size;
>
> setting a valid length indicator, wherein the valid length indicator is set to the amount of data and wherein the network adapter outputs only the amount of data set by the valid length indicator after the data has been transferred to the network adapter; and
>
> responsive to receiving the request, sending the transfer size and the valid length indicator to the network adapter and transferring to the network adapter an amount of data equal to the transfer size, wherein the network adapter, upon receiving the amount of data equal to the transfer size, identifies the transfer size and the valid length indicator, discards the dummy data based on the transfer size and the valid length indicator, and outputs the amount of data set by the valid length indicator.

Chen does not teach the feature of sending the transfer size and the valid length indicator to the network adapter and transferring to the network adapter an amount of data equal to the transfer size,

wherein the network adapter, upon receiving the amount of data equal to the transfer size, identifies the transfer size and the valid length indicator, discards the dummy data based on the transfer size and the valid length indicator, and outputs the amount of data set by the valid length indicator in response to receiving the request. The examiner states that *Chen* teaches this feature in the following cited sections of *Chen* reproduced below:

> The present invention further provides a system and method which takes advantage of a PCI-based system's inherent use of memory line sizes and boundaries during data transfers.

Chen, col. 11, lines 12-15.

The passage above discloses that *Chen* is directed to a PCI-based system's inherent use of memory line sizes and boundaries during data transfers. The *Chen* system is described in detail in col. 8, line 45 to col. 9, line 21, which is reproduced below:

> Referring still to step **504**, in the present embodiment, NIC **124** determines, from the information received at step **502**, which type of read request to transmit to host computer **100**. Typically, information such as that received in step **502** instructs a conventional NIC to generate a request to read a specified amount of data. Specifically, although the information received in step **502** may trigger a conventional NIC to generate a request to read a first amount of data, the present invention intelligently determines just how much of the data will actually be requested in the read request.
>
> Referring still to step **504**, in the present embodiment, NIC **124** determines the type of data to be read and the quantity of data to be read. Specifically, in the present embodiment, NIC **124** determines whether the information to be read is essential data or non-essential data. For purposes of the present application, nonessential data refers to data which does not necessarily have to be read by or transferred to NIC **124** in its entirety, and concurrently, in order to meet its intended objectives. For example, in the present embodiment, non-essential data includes data such as, for example, control and status information. Such control and status information includes, for example, packet descriptors, requests for status returns, and various other control information passed to NIC **124**. In the present application, essential information includes information such as transfer packets and various other information which is quickly used by NIC **124**. The present embodiment also determines the quantity of data which the information received in step **502** indicates should be read. At step **504**, if the present embodiment determines that the data to be read is non-essential, the present embodiment proceeds to step **506**. On the other hand, if at step **504**, the present embodiment determines that the data to be read is essential, the present embodiment proceeds to step **512**.
>
> Referring now to step **506**, having determined at step **504** that the data to be read is non-essential, the present embodiment "rounds down" or truncates the amount of data requested in the read request. That is, the present embodiment generates a read request for only a portion of the data which is referred to in the information received at step **502**. Furthermore, the portion of the data is selected such that when the portion of the data is prefetched and stored in, for example, cache memory of the host computer, the portion of the data will end on a cache line boundary.

Chen, col. 8, line 45 to col. 9, line 21.

The *Chen* system as disclosed in the passage above is directed to minimize CPU utilization during data prefetch operations by "rounding down" or truncating the amount of data requested in the read request. Specifically, *Chen* distinguishes between types of data to be read. Data to be read is differentiated between "essential" and "non-essential", wherein data is essential if it is actual data (e.g., transfer packets and various information which is quickly used by the NIC), and data is non-essential if the NIC does not have to be read by or transferred to the NIC (e.g., control and status information). If the data to be read is determined to be essential data, then a read request for all of the requested data is transmitted to the host computer. In contrast, if the data to be read is determined to be non-essential data, then *Chen* truncates the amount of data requested in the read request from the NIC. Thus, only a portion of the data in the original read request is prefetched and stored in the cache memory of the host computer.

Applicants agree with the examiner's statement in the Office Action that *Chen* does not teach a valid length indicator, wherein the valid length indicator is set to the amount of data and wherein the network adapter outputs only the amount of data set by the valid length indicator after the data has been transferred to the network adapter. As a result, *Chen* cannot teach sending a valid length indicator (with associated information) to a network adapter, nor can it teach having a network adapter identify the valid length indicator and use the valid length indicator to output a particular amount of data.

Chen also does not teach sending the transfer size to a network adapter and transferring to the network adapter an amount of data equal to the transfer size. *Chen* merely discloses allowing a NIC to reduce the amount of data in a read request based on if the NIC determines the data is essential or non-essential. Nowhere in *Chen* is there any mention of sending a transfer size value to a network adapter. *Chen* teaches that the NIC either generates a read request for all data (if it determines the data is essential), or generates a request for a portion of the data (if it determines the data is non-essential). The transfer size information according to the presently claimed invention is not referred to in *Chen*, nor would such information be of use in the *Chen* truncating method.

Chen further does not teach that a network adapter discards the dummy data based on the transfer size and the valid length indicator. As previously mentioned, *Chen* differentiates data as essential and non-essential. If the data is essential, the NIC in *Chen* generates a request for all of the data. *Chen* makes no mention of discarding any data from a request for all of the data. Thus, there is no dummy data discarded by a network adapter in this situation. If the data is non-essential, the NIC card does not receive such the data, but instead generates a request for a portion of the data. Assuming the truncated portion of data could be "dummy" data, the NIC card does not discard the dummy data in this situation, since the NIC card never receives such the non-essential data to discard. The NIC card in *Chen* only

receives the portion of the data which the NIC card has determined to be essential, and thus cannot discard dummy data it does not receive.

Consequently, *Chen* does not teach sending the transfer size and the valid length indicator to the network adapter and transferring to the network adapter an amount of data equal to the transfer size, wherein the network adapter, upon receiving the amount of data equal to the transfer size, identifies the transfer size and the valid length indicator, discards the dummy data based on the transfer size and the valid length indicator, and outputs the amount of data set by the valid length indicator in response to receiving the request as recited in claim 1 of the present invention.

Since claims 4-5 and 12-13 depend from claims 1 and 6, respectively, the same distinctions between the cited art and the claimed invention in claims 1 and 6 are applicable to these dependent claims. Thus, these dependent claims are patentable at least by virtue of being dependent from allowable claims.

The examiner suggests that "one or ordinary skill in the art would have been motivated to combine the cited references because they both teach transferring data from a memory to a network adapter for outputting the data to the network and the Webber et al's teaching of a valid length indicator indicating only the amount of data (packet payload) output to the network would increase feasibility in building a network frame ["Ethernet packets" in col. 7, lines 2-4 of Chen et al]" (Office Action dated July 26, 2007, pages 4-5). Col. 7, lines 2-4 of *Chen* are reproduced below:

> Data packets, such as Ethernet packets, that are incoming arrive at NIC **124** via network **132** and are stored in FIFO memory **140** of NIC **124** before being transferred to other hardware and software of computer system **100**.

Chen, col. 7, lines 2-4.

This section discloses how incoming data (Ethernet) packets arrive at the NIC and are stored in the memory of the NIC before being transferred to other hardware and software components in the system. However, *Chen* would not require or benefit from the use of a valid length indicator in *Webber* to determine the amount of data to output to the network. As previously mentioned, *Chen* teaches having the NIC determine whether data to be read is essential or non-essential. This determination allows the NIC to truncate the amount of data in the read request to request only a portion of the data if it determines the data is non-essential. Thus, *Chen* would <u>not</u> employ a valid length indicator which indicates the amount of data requested, since *Chen* teaches truncating the requested amount of data if the data is essential, and providing all of the requested data if the data is essential. As there would be no reason for *Chen* to employ a valid length indicator which indicates the amount of data requested, there would be no reason for one of ordinary skill in the art to have combined the teaching of *Chen* with the teachings of *Webber*. One would receive no benefit of such a combination. Consequently, one of ordinary skill would

not be motivated by the teachings of *Chen* and *Webber* to combine the references to reach the presently claimed invention. Accordingly, the examiner has failed to state a *prima facie* obviousness rejection against claims 1, 4-6, 9, 12-14, and 17-20.

Therefore, the rejection of claims 1, 4-6, 9, 12-14, and 17-20 under 35 U.S.C. § 103 has been overcome.

II. Conclusion

It is respectfully urged that the subject application is patentable over the cited references and is now in condition for allowance.

The examiner is invited to call the undersigned at the below-listed telephone number if in the opinion of the examiner such a telephone conference would expedite or aid the prosecution and examination of this application.

DATE: October 4, 2007

Respectfully submitted,

/Cathrine K. Kinslow/

Cathrine K. Kinslow
Reg. No. 51,886
Yee & Associates, P.C.
P.O. Box 802333
Dallas, TX 75380
(972) 385-8777
Attorney for Applicants